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THE ZEPHYR CAPITAL GROUP, INC.  
24 WOODBINE ROAD  
FLORHAM PARK, NJ 07932

TERRENCE P. MCGARTY  
CHAIRMAN & CEO

201-377-6269 (TEL)  
201-377-2143 (FAX)

January 23, 1997

William Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street  
Washington, DC 20554

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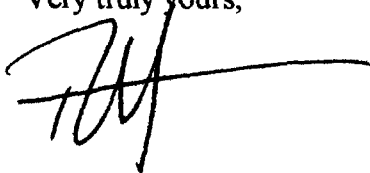
JAN 27 1997

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Dear Mr. Caton,

Enclosed is an original and four copies of a response to FCC IB Docket No. 96-261.

Very truly yours,



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Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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In the Matter of )  
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International Settlement Rates )  
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Comments from )  
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The Zephyr Capital Group, Inc. )  
("Zephyr") )

IB Docket No. 96-261  
February 7, 1997

**NOTICE OF PUBLIC RULE MAKING - RESPONSE**

**SUMMARY**

The Zephyr Capital Group, "Zephyr" or the "Company", is an international record carriers with facilities in New York and London. Zephyr also has offices but is currently awaiting operational concurrence from the Polish PTT, TPSA, for operational facilities in Warsaw, Poland. The Company will be able to provide for certain types of packet telecommunications, including but not necessarily limited to Internet access. It has also filed for licenses to act as an Internet Service Provider in Poland and other countries.

The Commission requested the Respondents positions on four key issues: how should settlement rates be established, how long should transition rates be in effect, and what enforcement mechanisms should be implemented. Finally the Commission requested information on the issue of competition. The Respondent has presented information that address these issues but in a broader context. The Commission has recognized the issue of Internet and Internet like services but has failed to join that issue at this stage.<sup>1</sup> The Respondent herein presents several issue that relate to how the overall settlements should join the inclusion of these rates and technologies since ultimately they will become inseparable. Secondly the Respondent takes the position in contrast to the Commission that rates must be established from the "bottom up" and not from the "top down" as has been developed in the Commission's methodology. The Respondent argues that that means is the only viable way to determine market and country sensitive price and costs changes. Third, the Respondent argues that the Settlement Rates must reflect the true and actual costs of providing the services and that the concept of common carriage must be

<sup>1</sup> See ¶ 13, IB- 96-261.

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incorporated into the overall settlement process. The Respondent support the TSLIRC pricing approach as a bottoms up approach and that this also allows for market and country specific pricing.

As to the establishment of interconnection agreement, the Respondent recommends that the Commission take the responsibility of establishing common benchmark rates between and amongst the countries involved and that the remedy be available to increase the settlement between that country and the US to match the rates that do not meet the benchmark level.

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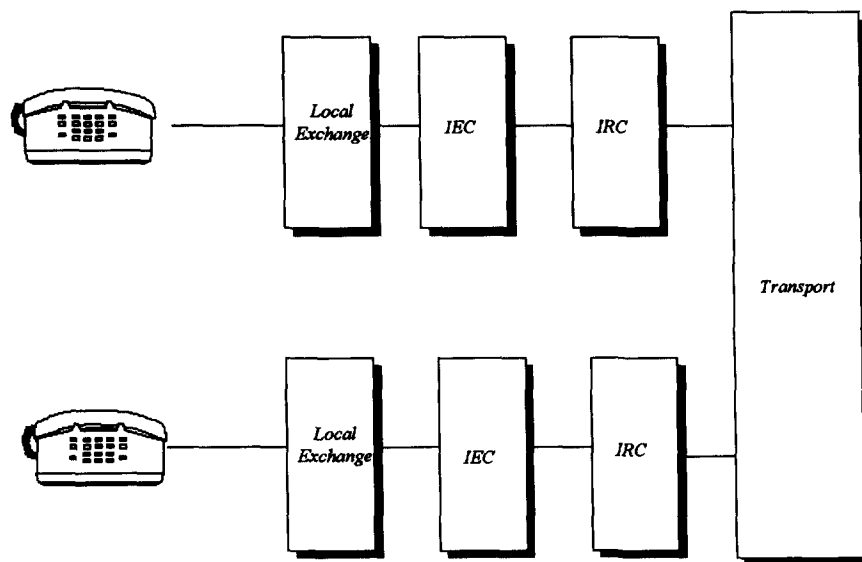
## **I. Technological Changes**

The Commission has established a model for the provision of international telecommunications. The Respondent proposes to use that model for the purpose of developing an alternative costing approach and also to use it to propose an alternative networking approach using the Internet based TCP/IP protocols. The Respondent believes that the Commission should view the international calling in a broader context and not just confine itself to the classical architecture. The current systems are basically voiced based using the SS7 type signaling and the E1 formats and derivative thereto. The newer systems use TCP/IP and are distributed and non-hierarchical.

### **A. Current Network Architectures**

The current network architecture as proposed by the Commission is shown below. It consists of the local carriers, an interexchange carrier, and an international record carrier. The backbone network is attached to the IRC. The network shown works in the following fashion:

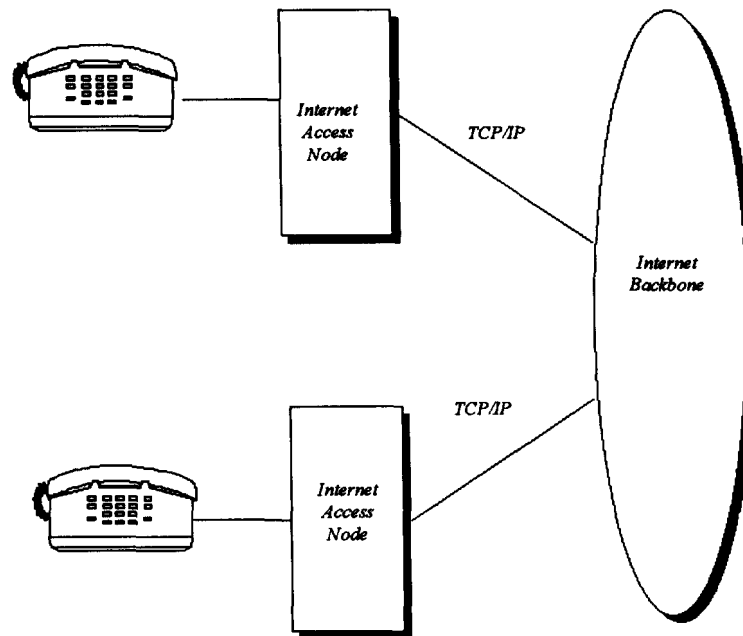
- *The LEC establishes a call to an IEC.*
- *The IEC establishes a call to the IRC.*
- *The IRC uses its own or some third party facilities to make a connection to another IRC location. It is over this path that settlements occur.*
- *The signaling uses an SS7 type signal or derivative, the formatting is 64 Kbps voice which may be compressed as required, and it uses an E1 or DS1 format or derivative.*
- *The system is hierarchical and generally voiced based.*



This is the standard system used in international telephony. A second option allows for the use of VSAT terminals and allows for "on-net" to "On-net" service or even services that are "off-net" at both ends of operations. The difference between the VSAT networks and those of the above are de minimus.

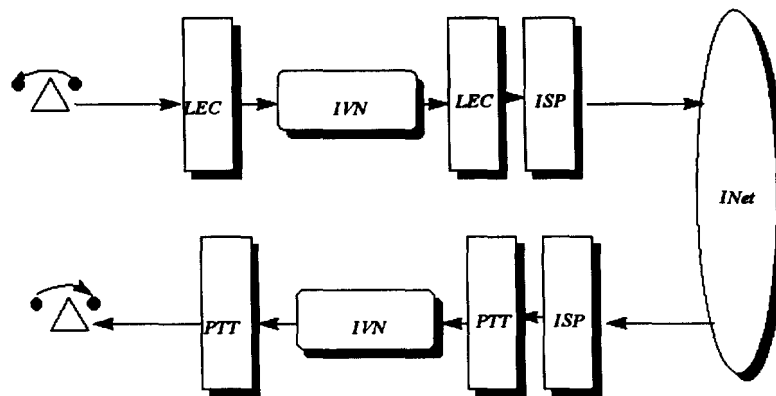
#### **B. Internet Architectures**

An Internet type system is dramatically different. It uses a packetized signal using the TCP/IP format. There is no difference between voice, video, data, or any multimedia service. The network can be shown as follows:

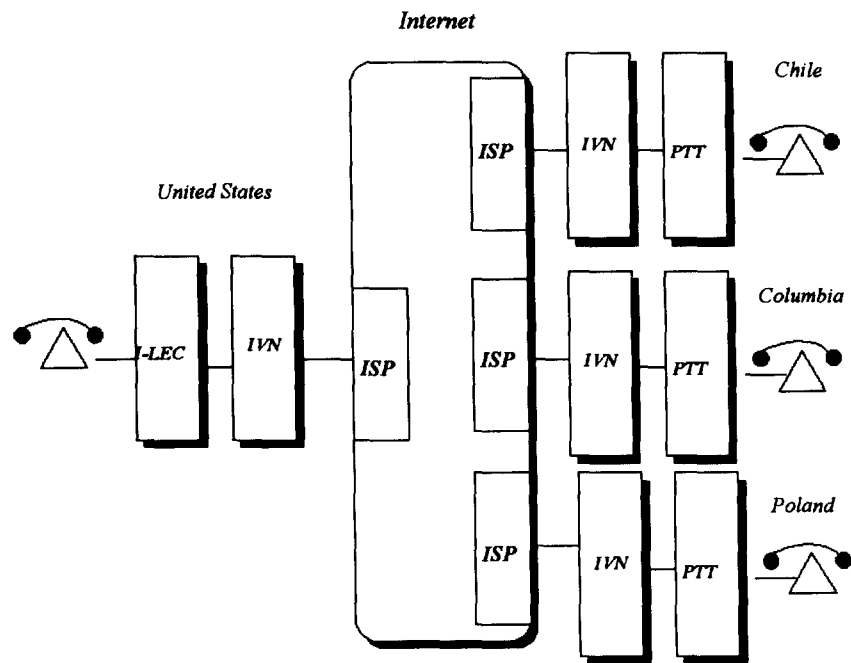


The following Table depicts the comparison between Internet LD and IEC long distance. One key observation of this industry is that the computer types are not telco knowledgeable and the telco types are not computer literate. Thus most of the competitors do not recognize the overall differences. The Internet is a packet network with control at the periphery and the signaling is in-band TCP/IP. This allows for great efficiencies in packet transport. The IEC network uses SS-7 out of band signaling and is structured for inefficient use of voice.

The following Figure depicts the overall interconnections. This reiterates what has been stated above but presents it in terms of the overall end to end call.



Full international connectivity using a TCP/IP based network can be shown in the following Figure. The local users access via the IVN and then to the Internet or Internet like backbone. The difference is shared backbone support. The Figure shows how the system can provide full interconnectivity independent of any local termination agreements.



The following Table depicts the difference between these networks. The key issue is that the Commission should recognize the existence of this alternative form and include it in its overall settlement discussions.

<i>Telephone LD</i>	<i>Internet LD</i>
<ul style="list-style-type: none"> <li>• <i>Uses "Class 4" Telco switching.</i></li> <li>• <i>Uses SS7 "out of band signaling" requiring homogeneous network architecture.</i></li> <li>• <i>Uses a circuit switched model.</i></li> <li>• <i>Minimizes delay by circuit connection.</i></li> <li>• <i>Provides "toll grade" voice.</i></li> <li>• <i>Requires significant software elements.</i></li> <li>• <i>Provides low blocking probability.</i></li> <li>• <i>Is moderately scaleable.</i></li> <li>• <i>Can leverage off of existing circuits from other carriers.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Uses a "Router" packet model in distributed network.</i></li> <li>• <i>Uses "in band" TCP/IP signaling allowing heterogeneous network flow.</i></li> <li>• <i>Uses a packet switched network format.</i></li> <li>• <i>Minimizes delay via "router table assignment and minimal ISP flow.</i></li> <li>• <i>Provides "toll grade" voice with some network latency.</i></li> <li>• <i>Allows open architecture for software support.</i></li> <li>• <i>Blocking can be minimized via Router control.</i></li> <li>• <i>Is completely scaleable.</i></li> <li>• <i>Generally uses common standards and common facilities.</i></li> </ul>

The Respondent argues that the Internet like services are becoming a major factor in international telecommunications. The respondent does not, however, mean that these are solely public Internet applications, although such may be included. The respondent takes the position that Internet like services, namely data like services, can combine voice, data, video, and a wide collection of fully integrated multimedia services, in a common network fabric, and that the ultimate determination of what is being carried is determined at the end user and not at some arbitrary PTT or IEC switching point. This is a critical difference.

## II. Cost Based Calculations

The Commission proposes that the costs be based upon three elements; international transmission, local switching, and national extension.<sup>2</sup> The Commission then predicates all of its costs analyses on these numbers. While the Respondent agrees with this approach for the current means and methods for switched based voice telecommunications, the Respondent argues that such an approach fails when applied to alternative telecommunications approaches.

The specific model as proposed by the Commission for costing contained the elements mentioned above. The Commission applied a specific methodology to those elements to come

<sup>2</sup> See ¶ 35 of IB Docket No 96-261, FCC 96-484, December 19, 1996.

up with certain costs.<sup>3</sup> The three elements are: international transmission, local switching, and national extension. The Respondent argues that rather than using tariffs as the sole arbiter of setting settlement rates that there is also a method for setting those rates on a costs based basis that reflects the actual costs incurred by the in-country provider. This additional approach shows that there can be an argument made for costs based upon forward looking technology as well as obtaining returns on past investments, if such be the case.

#### A. International Cost Based Elements

The cost elements for each relate to the following elements:

**Capital Equipment Costs:** It can be argued that the capital plant and equipment is generally the same for any country exclusive of tariffs and other tax like costs that the country must pay on the procurement of the equipment. The country may also have a costs of capital, so then when the capital and plant and equipment is equated to an annualized leased rate the lease rate must reflect that changing costs of capital. For example, in Poland, the respondent sees a 25% excise tariff on any imported telecommunications equipment that increase the capital costs base by that amount. In addition there is a risk premiums on capital financing of 2% to 2.2% that raises the annualized effective lease rates. The following Table presents a typical example using Poland as a case. If we assume an effective life, a tariff or excise tax rate, an interest rate and a risk market premium, then for every dollar the costs of switching per month is as shown below.

Effective Life (Years)	Tariff Rate	Interest Rate	Market Premium	Monthly Fee
5	25%	8.00%	1.50%	\$0.0263
5	25%	10.00%	1.50%	\$0.0275
5	25%	12.00%	1.50%	\$0.0288
5	25%	14.00%	1.50%	\$0.0301
10	25%	8.00%	1.50%	\$0.0162
10	25%	10.00%	1.50%	\$0.0176
10	25%	12.00%	1.50%	\$0.0190
10	25%	14.00%	1.50%	\$0.0206
15	25%	8.00%	1.50%	\$0.0131
15	25%	10.00%	1.50%	\$0.0146
15	25%	12.00%	1.50%	\$0.0162
15	25%	14.00%	1.50%	\$0.0179

<sup>3</sup> See ¶ 37, wherein the components are defined as: "**International facility component:** The international facility component consists of international transmission facilities, both cable and satellite, including the link to international switching facilities. This component includes only the half-circuit on the terminating end because originating carriers have traditionally been responsible for the half circuit on the originating end of a call. High capacity circuits, normally 1.544 Mbps or 2.048 Mbps circuits, are used for IMTS and most telephone administrations offer these circuits to customers on a dedicated basis. The cost element for this component, therefore, is based on foreign carriers' private line rates for dedicated circuits. Multiple 64 Kbps circuits are derived from the high capacity channels and multiplexed into voice grade circuits based on standard U.S. operating practices. This information, along with average monthly traffic volume per circuit, is used to convert the private line rates to a charge per minute for each country. **International gateway component:** The international gateway component consists of international switching centers and associated transmission and signaling equipment. Foreign carriers do not generally offer a separate tariff rate for the international gateway component, so the study relies on information published by the ITU. The cost of this component varies with the level of digital facilities. **National extension component:** The national extension component consists of national exchanges, national transmission, and the local loop facilities used to distribute international service within a country. Foreign carriers' domestic rates and the distribution of U.S. billed service within a country<sup>3</sup> are used to compute an average charge per minute for cost of this component."

Now let us assume that each trunk associated with switching is approximately \$200.00 US. This is a reasonable costs for switching in large numbers. Then we further assume a usage of 100 minute per month per use or equivalently a 1% Erlang load, a trunk can then support 100 subscribers. Thus we find that the capital per subscriber per month, and corresponding per minute is:

Per Month Per Subscriber: Assume a ten year, 8% rate, and we have \$2.60 per trunk per month or \$0.0260 per subscriber per month.

Per Minute Per Subscriber: On a per minute basis this is \$0.00026 per minute for switching.

The general conclusion is that switching is de minimis as a cost element.

Transport Costs: The transport costs are the costs for the fiber or other telecommunications facilities. They are generally distance sensitive but with fiber being more prevalent this distance sensitivity is no longer a significant factor. We assume a similar capital costs for transport but we double it, thus it is \$0.00052 per minute as with the above argument.

Direct Operations Costs: These costs include the provisioning of network management, customer services, billing, provisioning, inventory management, and repair and dispatching. These costs are generally personnel driven and thus are produced at local market rates. Frequently these costs dominate the overall costs element of the system. In US costs the total cost for these elements is between \$4.00 and \$8.00 per month per subscriber. This is allocated across all of the subscribers usage, local, long distance and international. If we assume that a typical international call represents 10% of the total usage, a high number, we have an average of \$0.60 per subscriber per month. This is \$0.006 per minute.

Overhead Operations Costs: Generally this represents a 40% to 70% overhead. We shall use 50% based upon the most likely costs as an overhead on the operations costs. This then is \$0.003 per minute.

Sales and Marketing Costs: These should relate solely to local in-country operations.

The summary of cost basis is as follows:

<i>Cost Element</i>	<i>Unit Cost</i>	<i>Number Units</i>	<i>Total Costs</i>
<i>Capital Plant</i>	<i>\$0.00026</i>	<i>3</i>	<i>\$0.00078</i>
<i>Transport</i>	<i>\$0.00052</i>	<i>2</i>	<i>\$0.00104</i>
<i>Operations Costs</i>	<i>\$0.00600</i>	<i>3</i>	<i>\$0.01800</i>
<i>Operations Overhead</i>	<i>\$0.00030</i>	<i>3</i>	<i>\$0.00090</i>
<i>Sales Costs</i>	<i>\$0.00000</i>	<i>1</i>	<i>\$0.00000</i>
<i>Total</i>			<i>\$0.02072</i>

In the above we have assumed that there are multiple Units of each element involved in any transmission. This is consistent with the model shown previously. If we further assume that the system is at best loaded at only 25% then the change to above model occur only in the Capital

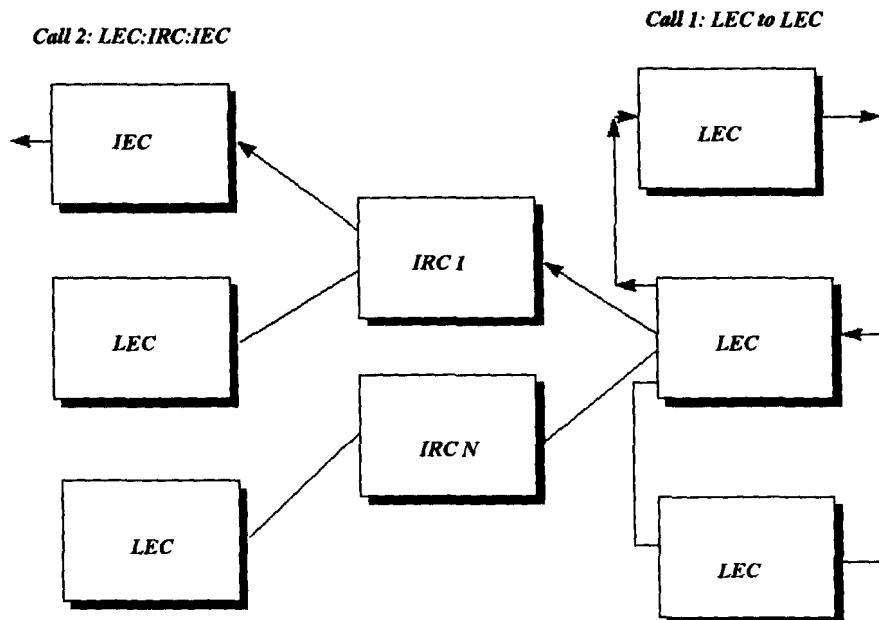
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Plant and transport elements. We then quintuple those numbers, increasing the costs about \$0.0050 per minute, or at most 25 % increase. This is because the dominant costs are operations. We have kept the operations costs at US rates, and we know if we factor in local economy costs the rates drop a factor of four in most markets, thus reducing the costs to well less than \$0.0100 per minute. It should be noted that these costs are dramatically lower than AT&T costs. These costs do not include the sales costs, a significant factor, nor do they include any R&D, product development, marketing, legal or other similar costs. These elements may easily, along with profit, raise the rate to a number comparable to AT&T.

The point we seek to make is that a "bottoms up" analysis of costing is essential by a market by market basis. The Commission has taken the approach of doing a "top down" approach using the "answer" of the tariffs. We argue that a "bottom up" approach using the actual costs is the better approach.

#### **B. Principle of Cost Based Pricing**

We conclude this with the Principle of Cost based Pricing. The principle can be explained via the following example. Consider the interconnection shown in the following Figure. Here we have a CMRS, an I-LEC, a C-LEC, several IRCs, and their interconnection. The CMRS will be the focal point. The CMRS connects to the IECs and to the I-LEC and C-LEC as well as to other similar players on the other side of the IECs.



Consider two calls. Call 1 goes from the CMRS to the local I-LEC. Call 2 goes from the CMRS, over an IEC to a customer at a distant I-LEC. Both calls are originated by a CMRS customer and terminate on an I-LEC customer.

Today, any IEC call must pay an interconnection access fee to the I-LEC to terminate on their network. As we indicated this is a wealth transfer policy and does not reflect any true cost. The CMRS before the Act paid the I-LEC a termination or origination fee and there was no compensation from the I-LEC to the CMRS. As we have demonstrated that is no longer the case.

***The Principle of Cost Based Pricing states the following:*** The consumer should pay for each link separately and they should pay only for those links for which they are customers of that link provider. The payment the customer makes should reflect a price that is in turn based on the costs of that link.<sup>4</sup>

<sup>4</sup>The issue here is a quid pro quo issue of parity in providing interconnection in a commodifiable market. For example, if two or more LEC or LEC like carriers enter a market, then there should be not interconnection fee and each carrier should price their services at the price based upon their costs and have no third party intervenor establish a de facto subsidization. If however, one carrier provides a service such as aggregation to more efficiently interconnect, then this added non pari passu facility should be compensated at an equal, comparable, and costs based level, shared amongst all players. The Baumol-Willig approach can apply here if we merely eliminate the artifact of ensuring a profit to the monopolist as Baumol has consistently done. By maximizing consumer welfare at the expense of the suppliers, namely by creating a competitive market, one arrives at the principle of cost based pricing.

The basis for the Principle is the same basis for the Baumol Willig theorem, namely maximizing consumer welfare. The argument is based upon the theory of Ramsey pricing. The classic approach taken by Baumol and Willig is as follows:

maximize  $\{P_1, \dots, P_m\}$  [ CS + PS ]; subject to PS = F

where CS is the consumer welfare and PS is the production surplus or the profit of the monopolist provider.<sup>5</sup> If however, we eliminate the monopolist totally, that is maximize it on the basis of consumer welfare alone, and if we assume a fully displaceable and commodicizable service, and if we further assume the change in technology that eliminate scale in toto, then the resultant position is the Principle of Cost Based Pricing. Namely, each separate provider sells their service on the basis on their own costs and the interconnection is free and reflects not costs to the consumer.

### III. Interconnection Agreements

The Commission has raised concerns about individual settlement agreements and the possibility of various large international carriers taking undue advantage of arbitrage opportunities within their own field of operations.<sup>6</sup> The Respondent recognizes that the opportunities not only exists but lead to clear anticompetitive practices. The smaller nondominant carrier has no recourse to this procedure and no remedy under international law if the settlement agreement are allowed to be set on a company by company basis. The Respondent argues that the rates must be set as if they were standard tariffs, and in fact similar to the benchmark rates for interconnect suggested by the Common Carrier Bureau in the Section 251 proceedings. The Respondent argues that the Commission should itself or through an appropriate government agency establish and set those rates. In the case of interconnection, the Commission had established a process and procedure that has a default to the local PUCs. The respondent believe that this process is a common process. Without recourse or remedy however, the FCC should, if they are the entity of choice, set standard rate based upon the TSLIRC or similar pricing models.

### IV. Dominant Carriers

The Commission has joined the issue of dominant and non-dominant carriers. The Respondent is a non-dominant carrier in all respects since it is in its initial stages of operations. The ability to support competition in the US between carriers must be continued and it is the Commission's responsibility to do that. The Commission has suggested special treatment for non-dominant carriers such as VSAT carriers.<sup>7</sup> The Respondent supports this position. In addition the Respondent argues that the new Internet based carriers should continue to receive preferential treatment so that market penetration may be achieved. This is consistent with the

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<sup>5</sup> See Brown and Sibley, *The Theory of Utility Pricing*, Cambridge University Press, 1986, p. 39.

<sup>6</sup> See ¶ 75, ID-96-261.

<sup>7</sup> See ¶ 74 and the footnote 127 in IB 96-261.

Commission's positions in the MFJ deregulation with AT&T and was kept in operation until 1996 when AT&T was finally declared non-dominant.

## **V. Conclusions**

The Respondent believes that the Commission must address the interconnection and settlements issue in as broad a context as possible. The current NPRM focuses on the issue of switched voice originating from the US from an IRC (214 compliant) carrier and terminating on a PTT or comparable carrier. As the Commission has noted the termination in markets wherein there is significant competition is generally not a problem and the termination costs are comparable to the issue of termination under the Section 251 of the Act a relates to IEC and LEC termination. The Respondent recommends that such a procedure be established using a set of agreeable countries to establish a means and methodology to demonstrate the viability of this approach.

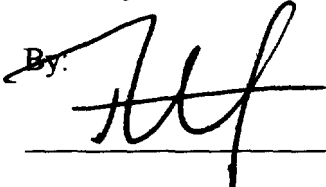
The Respondent recognizes, however, in certain market wherein it operates, there are significant financial returns to the PTT and in turn the local economy from the settlement process that falls to their favor. In fact, the respondent has performed various studies wherein the percent of the GDP resulting from settlements is a significant factor. Thus the Commission may be faced with insurmountable problems in countries of that type.

The Respondent recommends that the Commission establish a working group at two levels. First between and amongst the countries agreeable to cost based pricing. The second is with countries who may has less acceptance but could be significant influences on change. In the latter category the Respondent recommends the participation of Poland, India, Thailand, Argentina, and Uganda. In all cases the Respondent has fount that the PTTs in question have a certain openness and although may be opposed may be open to some discussions.

In addition, the Respondent recommends that the Commission include both large and small US carriers. The inclusion of just large carriers may influence the process in certain ways that may be less than productive based upon prior positions. The inclusion of newer and smaller US carriers may tend to create an air of openness and creativity amongst the positions developed and considered. This will also allow the inclusion of Internet like services and the ability to focus on the process of multimedia communication.

Respectfully submitted,

The Zephyr Capital Group, Inc.  
February 7, 1997

By: 

Terrence P. McGarty  
President  
The Zephyr Capital Group, Inc.  
24 Woodbine Road  
Florham Park, NJ 07932  
201-377-6269

Dated: February 7, 1997